Medical Information System in Hospital Emergency Departments, organizational perspectives

Dumont, Véronique; Rousseau, Anne

Published in:
Studies in health technology and informatics

Publication date:
2002

Document Version
Peer reviewed version

Medical information system in Hospital Emergency Departments
Organizational perspectives

Veronique DUMONT, *sociologist, researcher TELE (UCL)/CITA (FUNDP)*[1]
Anne ROUSSEAU, *Ph.D. in Applied Economy and Business Administration, in charge of research FUNDP, invited lecturer UCL*

Abstract. The study reported in this article examines the implementation of the same software in 3 emergency departments from different Belgian hospitals. It was experienced and perceived very differently as a failure or a success by the units' staff. The software integrates different functionalities, which can be chosen and customized by some members of the units themselves. We will look at the three processes of implementation to find out different plausible explanation for their 'failure or success'. Our approach is developed through the qualitative methodology of case studies. The translation theory is presented as a renewal way of thinking the perceived 'successful or failed' implementation of a new information system and a guide for new project in emergency department.

Key words. Hospital's Emergency Department, organizational change, information system, medical telematic, technology assessment.

INTRODUCTION

Our approach of the organizational perspectives of implementing medical computer solution in emergency department takes place in a wider multidisciplinary research on the development of an information system for emergency department[2]. The question asked was: which are the critical success factors to be taken into account in order to implement successfully the new information system developed in that research program. Indeed, experiences are often depicted as problematic or even as failure, underlining the resistance to change of the users or some critical factors of the context. The idea was to study the recent experience of three emergency departments towards the implementation of the same software. The product, a commercial one, is dedicated to the management of hospital emergency departments. It integrates a common kernel and functionalities that can be customized by department members themselves after a coaching period offered by the company. Our aim was to understand the processes of change: the decision and implementing processes (the choices of technology, functionalities, the different perceptions of the project, the actors' use of the new system). We have chosen a qualitative method, the case study. We interviewed and observed different actors (of whom the users) on their workplace. The research did not ended yet and the results presented in this paper must be considered as intermediate ones.

---

[1] TELE (Laboratoire de Telecommunications et télédétection), UCL (Université Catholique de Louvain), place du Levant, 2 B-1348 Louvain-la-Neuve, Belgium
CITA (Cellule Interfacultaire de Technology Assessment), FUNDP (Facultés Notre-Dame de la Paix), rue Grandgagnage, 21 B-5000 Namur, Belgium
[2] financed by the Walloon Region of Belgium

As we were going through the understanding of the different experiences, we felt that we could not give a list of critical success factors (standard, universal) needed to be encounter in order to guarantee the correct implementation of a new information system. A dynamic aspect of change processes needs to be associate to a better understanding of the staff's feelings of 'failure' or 'success'. We found that the "translation theory" could be a renewal in the way of thinking the problem of 'successful' or 'failed' implementation[3].

THE TRANSLATION THEORY

The perspective used to understand the difference between the three site processes is influenced by the actor-network studies (Callon-Latour) also called "translation theory". At first, the theory examines the emerging of new scientific facts and their support networks. For M. Callon and B. Latour, a scientific discovery or a technological innovation, or regarding our interest, any change in organization, can not be understand, in its failure or success, through its own characteristics, but through the progress it made into a network, according to controversies and agreements. The theory can also help managers in organizations to understand the processes at work while they are willing to carry out a change or implement a new technology. M. Callon and B. Latour try to answer the question "What are the conditions for the actors in any situation to converge around a change or an innovation?" This theory gives a sight on the mechanisms of co-operation between actors. It can be seen as a tool or a guide for project management (even if the chronology might be different from case to case, the steps being often iterative) and not only as a theory centered on the analysis of social processes.

Before going further, it's necessary to define a few terms we will use in our analysis.

The *network* is a meta organization gathering human and non-human, collective and individual beings linked together into an action pattern. A situation can be understood through the reconstruction of the networks, more or less developed, the chaining of all entities involved by the problem.

The concept of *translation* is commonly defined as the conversion of an utterance coming from a person to an understandable utterance for another person. This is used in this theory for any message, fact, information, and activity. Translation set up a comprehensible link between heterogeneous activities.

CASE STUDIES

In the hospital's emergency departments chosen for the case studies; two were included in the wider research program (the creation of an information system for the emergency department), one was added to our particular study. All three had experienced the implementation of the software more or less recently with different results. It's composed of two public hospitals, one in rural and one in urban environment, and one university hospital in rural surroundings. One implementation is presented and perceived as a success and two defined as failure by the department's chief executives even if that first description is moderate by some explanations. If the first case seems more developed than the two other ones, it is partly due to our ongoing analysis of these other sites and to the

[3] At the assumption 'once the technique will be elaborated, the people will be convinced', B. Latour answer 'when people will be convinced, the technique will be usable'.

precedence of the first site's experience as well as the positive terms associate to it. In the two other cases, the staff members did not use the software during a very long time.

The first case, a 'success' but …

The first department chief, thinking about an information system for his emergency department, created a broad support for his project (becoming 'our project') before a decision was taken and the demand passed on to the hospital management. Gradually, the department's executive secretary and the chief nurse joined the project as a consequence of to discussions and visits of other sites where the software was already implemented. He gained a management agreement to go deeply into the idea and asked for a hospital's informatics referent to join the group. So was created a team (the basis form of the network) including the department's chief executive, chief nurse, executive secretary and the hospital's informatics referent. The team defined a project with each parts' expectations and visions (heterogeneous but with a common vision of the solution). Then it was explained to the department staff either on a formal way (meetings with the nursing staff) or on an informal way (individual talks with the medical staff). The procedure is not only 'democratic' (representative team members, communication on the project to everyone) and so better perceived by people (as legitimate), it favored the creation of a broadly supported project even if the reasons of joining in the network are different. It helped people to define a viewpoint on the project and to hear others' ones. Interests, expectations, fears were expressed, discussed, confronted. Progressively the actors' interpretations evolved towards a general agreement on the fact a new information system was a solution to their problems, and on the choice of the software in particular. After convincing the financial chief executive of the hospital, the final decision of purchase was granted. The introductions and communications to the different persons and professional groups were made in regard to their particular interests and expectations (this is a form of translation).

Knowing the heterogeneous support of the project, a process started of defining practically and conceive the information system through the software. The software was chosen for its ability to be customized by a department member on site to particular demands and to be adapted onto the central hospital information system. The conceiving processes did not concern only the choices of functionalities and their customization. Choices also have to be made on organizational structures of work, rules, etc. The conceiving team is the group formed in the first phase. It met on a weekly basis. The executive secretary was cut out for the customization of the software, helped by a consultant from the software company. The team took the decisions on a consensual basis. When subjects or aspects were discussed, each team member could go back to the staff he would represent. From these multiple agreements, a first consensual customized version of the software was finalized. It did not integrate the whole expectations of each team member but is a team creation in regard to their common interests and those of the users. This is why they all see the final product as 'minimalist' as it did not reflect the entire functionalities expected by each of them.

Communication, training, tests, staff meetings are part of the implementation phase. The agreement of the staff members obtained further before was reinforced; support was given at the beginning to guide them through the new system by the team members and by the company consultant, an evaluation meeting was organized two weeks after the shift to decide the continuation or not of the new system. The agenda was to be made by the nursing staff who did not questioned the existence of the new system but asked for changes to be made and talked about the problems they experienced. To favor the new system,

some parts of the previous one were withdrawn (paper sheets). Regular staff meetings were scheduled at the start and some modifications were made on their advice or demand, either on site by the executive secretary, the informatic's referent, or by the software company. But not all problems found a rapid solution and some are still expected. Gradually, parts of the new system were integrated on working habits. This is a sign that the network becomes irreversible; the project solidifies into the working procedures. From a consensual feeling, nobody would go backwards to the previous system. The process did not arrived to an end but is still going on as expressions of new demands of improvements in order to fit people's interests make their way through the network. The choices and implementation of the new upgrade version of the software will probably bring up to light new divergent interests and representations of the system. The process of change is still going on, but the steps followed at the start need to be encounter again and again in order to maintain the viability of the network. If the enlarged network constructed and accepted the 'minimalist' solution at the start, hoping for further developments, questions and expectations are now expressed as time goes by without new information in relation to their concerns. Knowing the fragility of a network (new unions, different translations adopted by members), vigilance and transparence must be at work inside the network to keep the member's faith.

The two other cases, a 'failure' but …

At the starting point of the project, we also found the department chief executives, following the example of the first one that bought the software and shared his experience through professional medical networks. Computerized information system is an up-to-date subject in medical fields. This is generally taken as a 'granted' good solution for the problems of these units in terms of management. The progressive and continuous increase of patients coming in the emergency department has prompted the needs for tools to manage this situation. But the 'good' solution can be thought differently by the different units, as the problem itself will be defined differently.

In these cases, the decision-making phase was limited to fewer actors. The study of the context and the interests, questions, fears of the rest of the staff members was not as much investigate as in the first site where technical but also social and economical factors were taken into account before the decision of purchasing the software. The problems underlined by the chief executives in their unit are not exactly the same and seemed less deepened but the solution chosen is, finally, the same software, perceived then as the solution to all the emergency department's problems.

On the second site, the department chief executive got an agreement of the hospital informatic's department and management to give concrete form to his project. He was willing to replace his computer tools used to establish statistics and collect data by a new one. The department's chief executive made the decisions concerning the choice of functionalities and their customization. The chief nurse, the executive secretary and a consultant from the software company were included in a follow-up committee but the major interactions seemed to be between the chief executive and the consultant and the talks took place in a computer language, not understood by the other members. The hospital's informatics department worked on the integration of the software into the main hospital information system but did not transferred all the data hoped by the chief executive for his project. Some data requires then to be written on each information system. The content of the finalized version is mostly the department's chief creation and acknowledged as such by the staff members. All along the way, staff members will still identify the project as the chief executive's one and the solution, imposed to them, as

constraints only. Even if it is presented as a tool, usable for their work as well, they do not found any legitimization in the fact that he decided the functionalities and customization needed.

In the third case, the main project was the creation of a renewed emergency department inside the hospital. The department's chief nurse has elaborated the submission file in order to receive financial support from an external authority. The department's chief executive and chief nurse made the choices. They include a part in the submission file for the computer equipment, thinking that it would never be accepted. But the authority asked for more details and they completed the file with a list of hardware and the software chosen after visiting different data processing solutions. The hospital management did not agree but as the external financial support was granted, did not refused. The team composed with the department's chief executive, chief nurse and executive secretary started to conceive their version (functionalities and customization) with help from the consultant of the software company. Some other member of the staff seemed to have given their ideas on the project but the person pointed out, as the main conceiver, is the chief nurse, supported by the chief executive.

For the two sites, problems occurred with the software company at that time, either on the adaptation of their product to the hospital information system or on the help required for the customization as a young inexperienced consultant replaced the expert one. They did not felt the support they intended to have from the company in their processes of innovation. On these sites, the list of items to be completed by the staff members was more important and complex than in the first site's version, integrating more functionalities at the start. There was also a problem of multiple encoding for some data's.

The staff members were invited to training or testing but did not all agreed with the ideas and his development. Rapidly, some of them decided that the solution proposed did not fit their problems and interests. In their vision of the context and content of the project, the time needed to fulfill the computer file was too important considering their main objective, the treatment of patients, and the 'advantages' seen in their viewpoint. They rejected it, creating a growing network of oppose interests. For the people who did implicate themselves from the beginning, it was felt like a personal failure.

But if we look at the processes through a translation perspective, we might see that these steps are a normal way changes make their way throughout the organization. Indeed, signs of evolution in the translation processes are noticeable. Each site made a new attempt to restart the system on another simplified version (that integrate some of the staff objections but still made by the same team or person). One is still going on (on the third site), the other one did not give the results hoped by the chief executive (on the second site). The inquiry organized (in the second site) on the staff's choice to use or not the software after the two attempted implementations was taken as an opportunity by the staff to express their viewpoint and expectations towards the project. In spite of the two 'failed' attempts, the dynamic around the software did not ended and a renewed version conceived by a wider team is making its way. We cannot know yet if the rest of the staff members will recognize their 'representative' as legitimate or if the network will be able to enlarge to a wider support the idea that 'the software is a good solution for our problems'.

Of course, some particular factors might and do influenced those processes in their form, content, importance, duration, progression but at the end, in different context, with different people creating a different content a slow process of change is going on.

CONCLUSION, THE LESSONS LEARNED

Some steps can be pointed out throughout these experiences and explained by the translation theory. Even if they are presented here in a chronological way, it's important to underline that the way they appear in the different cases is more iterative or intermingled. The progress through the different steps will be different and adapted to each particular case.

1. The analysis of the context: the entities composing the situation (human and non-human) and their interests, their expectations. Importance is given to the reasons and explanations conferred by the actors to their way of acting. This phase was shortened in the last two cases.

2. The problematization and the translator. These phase leads to a question, a general and often vague definition of a problem, a temporary and limited project, likely to bring about the convergence of the different entities. The translator is the actor who has the sufficient legitimacy to be accepted by the others to manage this phase. He is at the start of the network creation. That legitimacy might be part of the problem in the two last cases. The department chief executive is not perceived as a 'member' of the 'care' staff, as their function is limited to administrative and management tasks (at the opposite of the first chief executive who still takes part into the medical tasks).

3. The creation of a support network for the project (allied interests). The network is produce by a permanent negotiation between the content and the context, conducted by the representative of each entities (legitimate to be able to pass on the message to their ranks). All of them have to be represented. In the two last cases, some entities were missing from the negotiation: the technical side for example or the different professional groups. This is not only a 'participatory project management' in order to gain the agreement of everybody on a unique and identical vision of the project but the acknowledgment of the different visions (heterogeneous) and their integration into the content of the project (different uses).

4. The development of that network (enrolment and mobilization of actors) and the project itself through it (content evolving). The legitimization processes towards the content, the procedures and the decision-makers and representatives favor the growing of the network in the first case. Each team member gets a role, is engaged in the action through the significance they find inside it. The network will grow in several stages, including more and more entities, which gives more consistency to the project.

5. The visibility, understandability of what is going on throughout the network is essential in order to obtain and keep the faith of people engaged into it.

REFERENCES

Doorewaard H. and van Bijsterveld M., « The osmosis of ideas : an analysis of the integrated approach to IT Management from a translation theory perspective », Organisation, SAGE, vol 8, N°1, Feb 2001.

Amblard H., Bernoux Ph., Herreros G., Livian Y.-F., « Les nouvelles approches sociologiques des organisations », SEUIL, Sociologie, 2nd edition, 1996.